IN THE CLAIMS

1. (*Currently amended*) A power semiconductor device ~~having high avalanche capability, said device~~ comprising:

a semiconductor substrate with two surfaces, an N+ doped layer extending into the substrate from one surface thereof, an N- doped layer over the N+ doped layer, a P- doped well formed in the N- doped layer and extending from the other surface of the substrate into the N- doped layer, a P+ doped region formed in the P-doped well and extending from the other surface of the substrate into the P-doped well, ~~the P- doped well defining an upwardly curving junction between the P- doped well and the N- doped layer, said upwardly curving junction extending from the lower end of the P- doped well to the other surface of the substrate~~, an N+ doped region formed in the other surface of the substrate and in the N- doped layer, said N+ region laterally spaced from the P+ doped region and the P-doped well, said P-doped well and P+ doped region having a combined thickness of about 5μm to about 12 μm; and

recombination centers comprising noble metal impurities disposed substantially in said N - doped layer and P - doped well.

2. (*Previously Presented*) The device of claim 1 wherein said P - doped well has a thickness of about 4 μm to about 10 μm.

3. (*Previously Presented*) The device of claim 1 wherein said P+ doped region has a thickness of about 0.1 μm to about 2 μm.

4. (*Previously Presented*) The device of claim 1 wherein said P - doped well has a dopant level of at least 10^{16} atoms/cm^3.

5. (*Previously Presented*) The device of claim 4 wherein said P - doped well has a dopant level of about 2.5x 10^{17} atoms/cm^3.

6. (*Previously Presented*) The device of claim 1 wherein said P+ doped region has a dopant level of at least 10^{18} atoms/cm^3.

7. (*Previously Presented*) The device of claim 6 wherein said P+ doped region has a dopant level of about $6x10^{19}$ atoms/cm^3.

8. (*Previously Presented*) The device of claim 1 wherein said N - doped layer has a dopant level of about 10^{14} atoms/cm^3 to about 10^{15} atoms/cm^3.

9. (*Cancelled*).

10. (*Original*) The device of claim 1 wherein said noble metal impurities are selected from the group consisting of gold, platinum, and palladium.

11. (*Original*) The device of claim 10 wherein said noble metal impurities comprise platinum.

12. (*Previously Presented*) The device of claim 11 wherein said recombination centers are formed by platinum diffusion through said N + doped substrate into said N - doped and P - doped well.

13. (*Original*) The device of claim 11 containing platinum impurities at a concentration of about $1x10^{15}$ to about $1x10^{16}$ atoms/cm^3.

14. (*Original*) The device of claim 13 wherein said concentration of platinum impurities is about $2 x10^{15}$ atoms/cm^3.

15. (*Original*) The device of claim 1 further comprising an N + doped region disposed in said N - doped layer.

16. (*Cancelled*).

17. (*Previously Presented*) The device of claim 16 comprising a diode, MOSFET or an IGBT power device.

18. – 34. Cancelled

35. (New) A power semiconductor device comprising:

a semiconductor substrate with two surfaces, an N+ doped layer extending into the substrate from one surface thereof, an N- doped layer over the N+ doped layer, a P- doped well formed in the N- doped layer and extending from the other surface of the substrate into the N- doped layer, said P-layer having a first thickness and forming a first boundary with the N- doped layer, a P+ doped region formed in the P- doped well and extending from the other surface of the substrate into the P-doped well to have a second thickness and to form a second boundary between the P+ doped region and the P- doped well, an N+ doped region formed in the other surface of the substrate, said N+ doped region having a third thickness and forming a third boundary between the N+ doped region and the P-well or the N-doped layer,

wherein the P+ doped region is thinner than the P- doped well and thinner than the N+ doped region, and

recombination centers comprising noble metal impurities disposed in said N- doped layer and said P - doped well.

36. (New) The device of claim 35 wherein the second boundary is more shallow than the first or third boundaries.

37. (New) The device of claim 35 wherein the ratio of thickness of the P+ doped region to the P-doped well is between 1:40 and 1:5.

38. (New) The device of claim 37 wherein the P+ doped region is between 0.1 to 2.0 μm thick and the P-doped well is between 4.0 and 10.0 μm thick.

39. (New) The device of claim 35 wherein the N+ doped region is separated from the P-doped well by the N-doped layer.

40. (New) The device of claim 35 wherein the N+ doped region is within the P-doped well.

41. (New) The device of claim 40 wherein the N+ doped region abuts the P+ doped region.